

## **National Transportation Safety Board**

### **CEN20LA005 - Engine Run Report**

Airplane: Aero Commander 100 (N5573M)

Engine: Lycoming O-320-A2B

Date: 11/04/2020

Location: Air Salvage of Dallas, Lancaster, Texas

The engine run was performed by two NTSB air safety investigators (Craig Hatch and Josh Lindberg).

To prepare for the engine run, a new battery was installed, the fuel line was plumbed to an external fuel can that was mounted on top of the cabin, the broken mixture cable was reattached, and a new propeller was installed (the accident propeller was damaged from the accident sequence). The mixture cable appeared to be separated due to accident impact forces, which also bent the nearby engine mount. The mixture was found in the full rich position before any alterations were made.

The first attempt to start the engine was unsuccessful. After numerous attempts to crank the engine, it would not start. The left magneto impulse coupling was not snapping, so the magneto was pulled to check for issues. The impulse coupling arms were stuck in place and could not be moved. The magneto was disassembled, and it was discovered that the oil flinger was not fully seated at the bottom of the drive shaft. Since it was not seated, the impulse coupling arms were jammed against it, and it could not move. The oil flinger was removed, cleaned, then reinstalled to a fully seated position. When the impulse coupling was reinstalled, the arms moved freely as expected. The rest of the magneto was reassembled and then reinstalled on the engine in the same position.

With the magneto issue fixed, the engine run was attempted again. The engine started on the first attempt and ran normally. The engine was operated at 1,100 RPM for 1 min, 1,300 RPM for 1 min, 1,600 RPM for 1 min, and then up to 2,000 RPM for 2 mins. The engine ran normally at 2,000 RPM and at 28" manifold pressure. The propeller installed was 2" longer than the accident propeller, as that was the most it was going to produce. The magneto check was normal, - 50, -100 RPM drop for each magneto. The oil pressure was 80-90 psi at 2,000 RPM. The oil temperature remained at the bottom of the green arc and near the yellow arc for the entire run, since it didn't get much time to heat up.

The start tachometer was: 2,393.31

The end tachometer was: 2,393.36

There were no mechanical anomalies found with the airframe and engine that would have caused a loss of power as reported by the pilots.